TRAC-Monterey Staff Notes
February 2007

I. Advancements in Modeling and Simulation

A) Urban Operations Focus Area Collaborative Team, Project Code 623

Conducted an IPR on 2 February 2007 where the UO FACT received updates on the status of three previously funded UO FACT projects: Acoustic Detection Algorithms in Urban Terrain (Don Albert, ERDC), Vehicular Mobility throughput in Urban Environments (George Mason, ERDC), and Small Unmanned Ground Vehicle Models and Data (Paul Richmond, ERDC). The UO FACT working group leads are currently preparing and submitting proposed FY08 Critical Research Areas for consideration. Conducted a familiarization tour of the proposed conference site for the FY08 UO Summit. POC is MAJ Manuel Ugarte, DSN 756-7575, email: manuel.ugarte@us.army.mil. Alternate POC is MAJ Jon Alt, DSN 756-3732, email jonathan.alt@us.army.mil

B) Modeling Close Range, Quick Reaction Engagements, Project Code 675

Executed post combat survey in conjunction with DCD, USAIC at Fort Hood and Camp Shelby, MS. Executed live virtual experiment with Soldier Battle Lab to gain data on Soldier behavior in close range quick reaction engagements. Coordinated with Natick Labs, IWARS proponent, for incorporation of final reference model into IWARS. Conducted weekly meetings with reference model developer to ensure correct framing of the issues. POC is MAJ Jon Alt, DSN 756-3732, email jonathan.alt@us.army.mil

C) Dynamic Sustainment Modeling in Support of Battle Command Analysis, Project Code 659

Continued code maintenance in support of TRAC-LEE study efforts. Demonstrated DS module integrated with CXXI at the Sustainment Battle Command modeling and analysis coordination meeting. POC is Mr. Jack Jackson, DSN 756-3087, email: Leroy.Jackson@us.army.mil

D) Logistics Battle Command, Project Code 676

Attended the February Sustainment Battle Command coordination meeting at Fort Lee to synchronize LEE, MTRY and WSMR development. Briefed LBC status and plan. Demonstrated the LBC stand alone prototype and DS module integrated with CXXI. Synchronized schedules with LEE and WSMR. Initiated coordination with CASS for medical representation. Began development of a distribution network use case. Secured contract support for LBC through 31 JAN 08 and initiated a performance work statement for additional distribution network research to support C2 and decision making representation. Secured likely FACT funding for LBC for Echelons Above Brigade (LBC4EAB), which adds representation of the distribution network at EAB and substantial research into forecasting with the intent of producing a stand alone analysis tool. Initiated coordination with MRO and FLVN on LBC4EAB. Recruited a potential thesis student to address C2 in LBC and LBC4EAB. POC is Mr. Jack Jackson, DSN 756-3087, email: Leroy.Jackson@us.army.mil

E) Joint Dynamic Allocation of Fires and Sensors (JDAFS), Project Code 645

Continued planning for a design of experiments (DOE) interface that identifies factors and appropriate ranges for those factors and implements runs for the resulting design on a computing cluster. LT Jeff Freye, USN NPS student, is developing design of experiments tool and an associated analysis methodology for JDAFS. Completed revision of JDAFS Users' Manual to incorporate database data entry. Coordinated with TRAC-MRO on mapping JDAFS capabilities to needs for setting joint starting conditions in other simulations. POC is MAJ Manuel Ugarte, DSN 756-7575, email: manuel.ugarte@us.army.mil. Alternate POC is MAJ Darryl Ahner, DSN 756-7574, email: Darryl.Ahner@us.army.mil

F) UAV Mix Tool for Force Modularity, Project Code 309

Developed mission areas to better represent Joint missions. Completed the distribution of ASC-U on a computing cluster. Updated the list for potential ASC-U improvements. Completed the representation of ingress and egress routes for (Joint) ISR assets. Maj. Derek Oliver, USAF NPS student, continues to develop a DOE front end tool and a transshipment formulation for UAV assignments to better determine AV path feasibility. POC is MAJ Manuel Ugarte, DSN 756-7575, email: manuel.ugarte@us.army.mil**.** Alternate POC is MAJ Darryl Ahner, DSN 756-7574, email: Darryl.Ahner@us.army.mil

G) GDP-ISR Trade-Off Analysis, Project Code 732

Kicked off initial project effort and developed tool development and analysis project plan. Completed a functional decomposition of the Survivable, Persistent, and Timely ISR attributes into Measures of Performance. Identified appropriate analytic tools and tool improvements required to obtain Measures of Performance. Line-of-sight tool development is complete. Scheduling tool of ISR assets to Mission areas for non-penetrating ISR platforms is near complete. LT Jeff Freye, USN NPS student, is developing design of experiments tool for JDAFS to fully explore basing decisions and effects of ISR assets. POC is MAJ(P) Darryl Ahner, DSN 756-7574, email: Darryl.Ahner@us.army.mil

H) Representing Urban Cultural Geography, Project Code 689

Coordinated with MCCDC OAD to partner on their Irregular Warfare study and develop the methodology, scenarios and data. Drafted a project coordination sheet for partnering with MCCDC OAD. Coordinated with NPS faculty and received their research proposals. Initiated coordination with TRISA. Funding is expected in early March. POC is Mr. Jack Jackson, DSN 756-3087, email: Leroy.Jackson@us.army.mil. Alternate POC is MAJ Jon Alt, DSN 756-3732, email jonathan.alt@us.army.mil

II. Advancements in Analysis Techniques and Methodologies

A) Objective OneSAF System (OOS) Behavior Model Analysis, Project Code 666

Initiated work on new FY 07 phase of OOS project, Automation of Behavior Verification. Focus for FY07 will be developing concepts and tools to automate the previously developed verification methodology. Efforts will be made to collect setup data

and verification execution result data in order to facilitate the verification process and reduce overhead burden and manpower and time requirements to conduct verification. Primary work currently being conducted on determining ways to parse OOS code and architecture to extract behavior verification input and data collection from simulation runs. POC is CPT Michael Martin, DSN 756-7580, email michael.martin9@us.army.mil

B) Rapid Equipping Force (REF) Analysis Methodology, Project Code 670

Completed the major improvements to the Assessment Based Rapid Acquisition HSI Analysis Module (ABRAHAM) tool. ABRAHAM is an Expert System that can be used to support the comparison of potential alternatives and the generation of assessment surveys from a human performance perspective. We are continuing to conduct background research into analysis methodologies used by other rapid acquisition organizations in DoD, other government agencies, and industry. Current overall concept includes: methodology for quick turnaround analysis of REF materiel alternatives, an overall analysis of REF processes, the development of a rapid acquisition analysis support system, the development of a rapid ordering and contracting support system, and the development of an assessment support tool. POC is MAJ Eric Tollefson, DSN 756-7578, email: Eric.Tollefson@us.army.mil

C) Soldier Representation in M&S, Project Code 615

Researching the feasibility of deploying the Soldier modeling and simulation (M&S) collaborative web portal either behind AKO or on a separate server using AKO authentication. The Soldier M&S collaborative web portal will serve as lines of communication between Soldier M&S executors and consumers. We have developed a follow-on contract to refine and deploy the initial web portal prototype. Contractors will begin work in March. Also, pursuing students and faculty to work on Soldier M&S topics. POC is MAJ Eric Tollefson, DSN 756-7578, email: Eric.Tollefson@us.army.mil

D) Individual Soldier Close Combat Skills and Activities, Project Code 525

Finalized technical report; awaiting final approval. POC is MAJ Jon Alt, DSN 756-3732, email jonathan.alt@us.army.mil

E) High Performance Computing Clusters and Design of Experiments, Project Code 681

Finalized CPT Adam Peters (ITM) thesis proposal. Professor Paul Sanchez will lead his to develop a data model to support the project. Continued coordination on various project to complete or initiate integration into the HPCC environment. Initiated detailed coordination with the MOVES group developing Viskit, a visual tool supporting experimental design and analysis using event graphs to generate Simkit models and XML to represent models and data. POC is Mr. Jack Jackson, DSN 756-3087, email: Leroy.Jackson@us.army.mil

F) M&S/OR Advancements, Project Code 639

OneTESS: Dr. Baer prepared the initial report on Synthetic Natural Environment representation. Focus is on fidelity of simulated and actual environment, and ability to update simulation environment representation based on changes in real world.

Correlation between synthetic and real world is necessary for Geoparing in OneTESS (using simulations to conduct Ph and Pk calculations for instrumented real world actors). POC is CPT Michael Martin, DSN 756-7580, email: michael.martin9@us.army.mil

LTC Schamburg, Mr. Jackson, MAJ Tollefson, MAJ Martin, LTC Larimer (TRAC-FLVN), and selected NPS faculty and students conducted initial coordination meetings for the TRAC-FLVN C4ISR FACT project titled "Effects of Ambiguity on the Military Decision Making Process." The TRAC-Monterey portion of the larger TRAC-FLVN effort includes: 1) support to survey development and analysis; and 2) Human Systems Integration (HSI) lab experiments with military subjects. POC is CPT Michael Martin, DSN 756-7580, email michael.martin9@us.army.mil

G) JIEDDO Analytical Support, Project Code 729

Traveled to TRAC-WSMR 12-14 FEB for training on accessing available IED and BlueForce Tracker data. Along with LTC(P) Cioppa, conducted initial Proof-of-Concept classification and regression tree (C&RT) analysis of the WSMR Combat XXI-derived data for the Doura neighborhood and presented the results to Mr. Kirin and Ms. Blechinger on 23 FEB. Currently focused on building a Proof-of-Concept C&RT based on the WSMR Combat XXI-derived data for CAO Warrior and on identifying/developing other data sources for the full-scale C&RT model. POC is MAJ Rich Spainhour, DSN 756-, email: Rich.Spainhour@us.army.mil

III. Future Systems Applied Research

A) Future Force Warrior (FFW) Capabilities Analysis, Project Code 220

Finalized technical report; awaiting final approval. POC is MAJ Jon Alt, DSN 756-3732, email jonathan.alt@us.army.mil

B) Future Force Warrior (FFW) Experimental Design & Analytical Support, Project Code 687

Recruited NPS faculty to support the development of questionnaires to facilitate data collection during live testing. Coordinated for integration of data to support modeling of FFW capabilities into IWARS. This integration will build on the reference model being developed for the Modeling Close Range Quick Reaction Engagements project. Participated in C4-ISR On –the-Move planning meeting to address FFW data collection needs and the break out of operational vignettes during the exercise. POC is MAJ Jon Alt, DSN 756-3732, email jonathan.alt@us.army.mil

C) Land Warrior/Mounted Warrior DOTMLPF Assessment, Project Code 105

Continuing to lead the questionnaire and interview portion of the assessment. Focus this month was on compiling and packaging the major aspects of our effort for presentation to the Assessment Working Group (AWG) in mid-February. Our participation in the AWG meeting involved both presenting a summary of our work and providing input into the final packaging of the overall study results and recommendations. Current effort is to write a technical annex to the main study report. POC is MAJ Eric Tollefson, DSN 756-7578, email Eric.Tollefson@us.army.mil

D) Multi-Purpose Enterprise Simulation Suite (MPESS), Project Code 673

Continued functional analysis and development of alternative concepts for Future Army M&S Strategy. Primary effort was on compiling hierarchical decomposition of MPESS functions into report format. Additionally coordinated with NPS personnel external to program to discuss new simulation engine construction paradigm which would be applicable to MPESS. Also coordinated with Soldier M&S portal project to provide support for portal construction. Soldier M&S project goals closely coincide with MPESS project goals, though on a more specific scope, and can be used as a demonstration of concept for MPESS. Conducted research on viable portal structures to support MPESS functions. POC is CPT Michael Martin, DSN 756-7580, email: michael.martin9@us.army.mil

E) Sensor to Commander Metrics, Project Code 677

Continuing to develop mathematical model framework to describe information flow of the Conceptual Model of Situated Cognition and appropriate feedback filters. Fitted probability distributions for arrival of information and processing time to experimental data. Math group completed paper submission to IEEE Systems, Man, & Cybernetics conference. Developing valuation model based on Commander Critical information Requirements. Phd students LTC Donovan Phillips and LTC(R) Bard Mansager are 1) developing probability models of processing time and integrating model into dynamics, 2) developing value functions of information and 3) developing control mechanisms that affect information flow. POC is MAJ Darryl Ahner, DSN 756-7574, email: Darryl.Ahner@us.army.mil

F) CBRN Tactical Situational Awareness, Project Code 686

Completed coordination with the SEED lab at NPS for the development of a rapid scenario generation tool for use with Pythagoras. The intent of this tool is to facilitate quick turn analysis of CBRN and related issues by reducing the time required to set up a scenario within Pythagoras and IWARS. Continued to coordinate with team in place for the development of related design of experiments tool. This tool will facilitate the use of large designs of experiments with IWARS and Pythagoras. Developed Pythagoras representations for the AMSAA standard urban terrain zones to facilitate further exploration. POC is MAJ Jon Alt, DSN 756-3732, email jonathan.alt@us.army.mil